
From: Jennifer Lambert <jlambert@nobis-group.com>
Sent: Monday, February 24, 2020 11:50 AM
To: Jennings, Lynne; MORASH, MELANIE; DiLorenzo, James; Brandon, William; Kelly, Christopher; Carroll, Courtney; Ng, ManChak; Pechulis, Kevin; garry waldeck
Cc: Jeffrey Brunelle
Subject: FW: EPA Comments - Olin Chemical Superfund Site - Wilmington, MA - Olin's Proposal to Amend the Quarterly Groundwater Monitoring Program
Attachments: MWs proposed for removal.pdf

I reviewed Olin's request to reduce the proposed quarterly monitoring. The attached PDF shows the original plan for annual and quarterly sampling, the additional locations that we had requested in our 11/19/19 memo, and the locations that Olin has disputed in the email sent on 2/21 (below). Note that Olin did add several locations to the quarterly monitoring program based on FS discussions and 2019 comprehensive data results (GW-416D, shallow wells close to East Ditch, and additional surface water locations) in their 10/23/19 monitoring proposal. Notes on the wells that Olin wants to remove from the quarterly sampling program are below:

1. GW-43DR: This is in a fairly critical location between the Jewel Drive/OPWD DAPL pool and the Main Street DAPL pool. GW-69D is somewhat close as mentioned, but not directly between the two pools. I would prefer for this not to be dropped off the sampling entirely, but perhaps they can reduce the sampling frequency to once per year.
2. GW-51D: I agree that GW-51D and GW-17D are close to each other and agree with picking one of the two. GW-51D is closer to the edge of the property and more equidistant between GW-4D and GW-307; however, GW-17D had higher concentrations in 2019. Therefore, Olin's selection of GW-17D is reasonable.
3. GW-79S: the response mentions GW-16RR as a replacement. I suspect this is supposed to be PZ-16RR, as GW-16R is close to Plant B and not South Ditch. I'm fine with replacing GW-79S with PZ-16RR.
4. GW-204M: I remain concerned that concentrations have increased in the vicinity of this previously non-detect cluster. The upgradient wells to this (GW-66D and GW-71D) also had increasing concentrations. If access is a concern, I would suggest reducing the sampling frequency to once per year.

I'm open to reducing sampling frequency for some additional locations to reduce costs. For example, Olin may consider reducing the sample frequency at locations with multiple well screens, so that the wells with the highest concentrations (typically the deepest well screens) are sampled quarterly but the well in the cluster with the lowest concentration (typically the shallowest well screen) is sampled semiannually or annually.

Sincerely, Jenny

From: Esakkiperumal, Chinny CERG <CEsakkiperumal@olin.com>
Sent: Friday, February 21, 2020 3:12 PM
To: Jennings, Lynne <Jennings.Lynne@epa.gov>; MORASH, MELANIE <morash.melanie@epa.gov>
Cc: Cashwell, James M CERG <JMCashwell@olin.com>; Bowen, Libby T <libby.bowen@woodplc.com>; James DiLorenzo <dilorenzo.jim@epa.gov>; Tull, Kerry R <kerry.tull@woodplc.com>; Walter, Nelson <nelson.walter@woodplc.com>; Brandon, William <brandon.bill@epa.gov>; Kelly, Christopher <kelly.christopher@epa.gov>; Sugatt, Richard <sugatt.rick@epa.gov>; Carroll, Courtney <Carroll.Courtney@epa.gov>; Jennifer Lambert <jlambert@nobis-group.com>; Jeffrey Brunelle <jbrunelle@nobis-group.com>; Ng, ManChak <ng.manchak@epa.gov>; Pechulis, Kevin <pechulis.kevin@epa.gov>; garry waldeck <Garry.Waldeck@state.ma.us>
Subject: RE: EPA Comments - Olin Chemical Superfund Site - Wilmington, MA - Olin's Proposal to Amend the Quarterly Groundwater Monitoring Program

Lynne/Melanie,

Thank you for the comments, dated January 14, on the subject matter. Olin, in general, agrees to incorporate the recommended additions to the quarterly monitoring, except for wells, GW-43DR; GW-51S/D; GW-79S; and GW-204M. These five wells are in areas where we have other wells that are already part of the ongoing quarterly monitoring program. Further, Olin believes that collecting data from these wells adds very little value in understanding and refining the overall Site Conceptual Model.

- GW-43DR (downgradient and to the northeast of the Jewel Drive DAPL pool):: GW-43DR is located between GW-29D and GW-69D. GW-69D is already part of the quarterly program and GW-29D will be added to the program. Similar to GW-43DR, GW-69D is also downgradient of the Jewel Drive DAPL pool and GW-43DR is within ~200 feet of GW-69D. This well is also in an area that is known to be impacted (between DAPL pools), so additional data will not add to our understanding of site conditions substantively.
- GW-51S/D (west of East Ditch):: Wells GW-51S/D are located within ~150 feet of GW-17S/D, which will be added to the quarterly program. Further, GW-4D, monitored quarterly, is also immediately downgradient of GW-51S/D.
- PZ-79S (between Containment Area and South Ditch Stream):: GW-79S is located <100 feet of another well, GW-16RR, which will be added to the quarterly program. Although PZ-79S showed higher NDMA concentration in 2019, sampling GW-16RR will help to evaluate the proposed objective of understanding potential groundwater impacts to the South Ditch Stream.
- GW-204M (Maple Meadow Brook Wetlands) – This well is within ~ 200 feet of GW-82S/D, which is already part of the quarterly program. Further, accessing GW-204M would be a challenge as it is in the Maple Meadow Brook (MMB) area. However, as part of the ongoing efforts to evaluate MMB access, Olin will add GW-204M to the list of MMB wells that may require access.

As noted by USEPA, Olin will continually assess data from the quarterly sampling and will optimize sample locations and sampling frequency based on the groundwater concentration data.

We appreciate the opportunity to discuss this with EPA/Nobis and look forward to the call.

Regards,
Chinny.

Chinny Esakkiperumal, P.G., CEM
Olin Corporation
423-336-4675 | CEsakkiperumal@olin.com

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From: Jennings, Lynne <Jennings.Lynne@epa.gov>

Sent: Wednesday, February 19, 2020 6:59 AM

To: Esakkiperumal, Chinny CERG <CEsakkiperumal@olin.com>

Cc: MORASH, MELANIE <morash.melanie@epa.gov>; Cashwell, James M CERG <JMCashwell@olin.com>; Bowen, Libby T <libby.bowen@woodplc.com>; DiLorenzo, James <dilorenzo.jim@epa.gov>; Tull, Kerry R <kerry.tull@woodplc.com>; Walter, Nelson <nelson.walter@woodplc.com>; Brandon, William <Brandon.Bill@epa.gov>; Kelly, Christopher <kelly.christopher@epa.gov>; Sugatt, Richard <Sugatt.Rick@epa.gov>; Carroll, Courtney <Carroll.Courtney@epa.gov>;

jlambert@nobis-group.com; jbrunelle@nobis-group.com; Ng, ManChak <Ng.ManChak@epa.gov>; Pechulis, Kevin <Pechulis.Kevin@epa.gov>; garry waldeck <Garry.Waldeck@state.ma.us>

Subject: Re: EPA Comments - Olin Chemical Superfund Site - Wilmington, MA - Olin's Proposal to Amend the Quarterly Groundwater Monitoring Program

<< THIS EMAIL ORIGINATED FROM OUTSIDE OF OLIN >>

Good morning Chinny,

As discussed yesterday, EPA approves of this schedule change. I would like to propose that we discuss the quarterly groundwater monitoring program next Thursday, 2/27/20, at 10:00 am. It would be helpful if you could send us an email with a summary of the wells you want to discuss and why you feel they are not necessary in advance of the call so that Nobis and Chris Kelly can review.

Please let me know if that works.

Thanks
Lynne

Sent from my iPhone

On Feb 18, 2020, at 5:02 PM, Esakkiperumal, Chinny CERG <CEsakkiperumal@olin.com> wrote:

Lynne/Melanie:

As discussed and agreed on the call today, we anticipate submitting the revised "*Proposal to Append the Ongoing Quarterly Monitoring Program*" letter by March 6, 2020. The revised letter will incorporate relevant amendments, to be discussed/agreed upon during a call (to be scheduled for the week of February 24).

Let me know if any questions.

Regards,
Chinny.

Chinny Esakkiperumal, P.G., CEM
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From: MORASH, MELANIE <morash.melanie@epa.gov>

Sent: Tuesday, January 14, 2020 11:44 AM

To: Esakkiperumal, Chinny CERG <CEsakkiperumal@olin.com>

Cc: Jennings, Lynne <Jennings.Lynne@epa.gov>; Cashwell, James M CERG <JMCashwell@olin.com>;

Bowen, Libby T <libby.bowen@woodplc.com>; DiLorenzo, James <dilorenzo.jim@epa.gov>; Tull, Kerry R <kerry.tull@woodplc.com>; Walter, Nelson <nelson.walter@woodplc.com>; Brandon, William

<Brandon.Bill@epa.gov>; Kelly, Christopher <kelly.christopher@epa.gov>; Sugatt, Richard <Sugatt.Rick@epa.gov>; Carroll, Courtney <Carroll.Courtney@epa.gov>; jlambert@nobis-group.com; jbrunelle@nobis-group.com; Ng, ManChak <Ng.ManChak@epa.gov>; Pechulis, Kevin <Pechulis.Kevin@epa.gov>; garry waldeck <Garry.Waldeck@state.ma.us>
Subject: EPA Comments - Olin Chemical Superfund Site - Wilmington, MA - Olin's Proposal to Amend the Quarterly Groundwater Monitoring Program

<< THIS EMAIL ORIGINATED FROM OUTSIDE OF OLIN >>

Good morning, Chinny,

Thank you for submitting your letter, dated October 23, 2019, *Proposal to Append the Ongoing Quarterly Monitoring Program* (Letter). We appreciate your consideration of the following set of comments. Please submit a revised Letter, including responses to comments, as appropriate, by Friday, February 14th for EPA's review and approval.

Comments:

1. EPA concurs with your proposal to include GW-416D in the quarterly monitoring program. Both GW-416D and GW-416BR were included in EPA's original request for comprehensive sampling (EPA's November 15, 2018 letter from Christopher Smith to Chinny Esakkiperumal). Additionally, the sample collected from this well in March 2019 had an n-nitrosodimethylamine (NDMA) concentration of 17 nanograms per Liter (ng/L), showing an increase at this location from the 2017 sample result of less than 1 ng/L.
2. The Letter proposed to add certain shallow wells close to the East Ditch Stream to the quarterly sampling program and sample them for ammonia, bis(2-ethylhexyl)phthalate (BEPH), NDMA, sulfate, and chromium. EPA concurs with the addition of these wells to the quarterly sampling program, however, these wells must also be sampled for aluminum (which was identified as a potential concern for ecological risks in surface water in the 2015 Baseline Ecological Risk Assessment or BERA), hexavalent chromium, and the parameters included in the Plant B quarterly sampling program (trimethylpentenes or TMPs, iron, and volatile petroleum hydrocarbons).
3. After reviewing the 2019 groundwater monitoring results and based upon that review, EPA requires that the following locations be added to the quarterly monitoring program, in addition to those locations listed in the Letter. Olin may subsequently propose a decrease in sampling frequency or the removal of certain locations following the receipt and review of sampling results, if certain sampling locations have consistently low and/or downward trends:
 - a. GW-17D (west of East Ditch Stream): The 2019 NDMA concentration of 92 ng/L was elevated above the previous detections of 51 and 56 ng/L in 2010. In addition, this location (upgradient of the confluence of the South and East Ditch Streams), may be helpful in evaluating potential impacts to surface water.
 - b. GW-29S/D (northeast of the Containment Area): NDMA concentrations in GW-29S are extremely erratic, ranging from 7.7 ng/L to 780 ng/L, and the 2019 sampling result was 270 ng/L. Monitoring will help to clarify trends in this area. Monitoring GW-29D (that has had steadily decreasing concentrations from 130 J ng/L in 2003 to 24 ng/L in 2019 will help to determine the relationship between NDMA concentrations in these wells.

- c. GW-43DR (downgradient and to the northeast of the Jewel Drive DAPL pool): Location downgradient of DAPL pool. The 2019 NDMA concentration of 210 ng/L are lower than previous sampling results at GW-43 (which ranged from 3200 J ng/L in 2003 to 8600 J ng/L in 2004), but still elevated.
- d. GW-45D (Main Street DAPL pool): The 2019 NDMA concentration of 19,000 ng/L was more than double the average 2010 concentration of 5250 ng/L, as well as being above the previous maximum of 16,000 ng/L in 2003. The trend appears to be increasing, and the shallow well also indicates an increasing trend (from 5.6 ng/L in 2003 to 41 ng/L in 2019).
- e. GW-51D (west of East Ditch Stream): The 2019 NDMA concentration of 53 J ng/L at this location at the eastern edge of the Olin property has doubled since the previous sampling event of 22 ng/L in 2010. It would be appropriate to monitor this location to evaluate potential trends.
- f. GW-51S (west of East Ditch Stream): NDMA concentrations appear to be increasing in the associated deep well (see comment 3e, above). This area has been identified as a potential concern for East Ditch Stream surface water impacts.
- g. GW-52D (west of East Ditch Stream, south of Plant B): The Letter proposes to add GW-52S to the monitoring program, however, the 2019 concentration in GW-52D of 100 ng/L increased by almost an order of magnitude above the previous sample (13 ng/L in 2010). It would thus be appropriate to add GW-52D to the monitoring program, as well as the proposed GW-52S.
- h. GW-70D (western perimeter of Main Street DAPL pool): The 2019 NDMA concentration of 19,000 ng/L showed a significant increase above previous sampling results to the highest concentration yet detected. Previous results ranged from 7,900 ng/L in 2010 to 15,000 J ng/L in 2004.
- i. GW-79S (between Containment Area and South Ditch Stream): This shallow well showed a sharp increase in NDMA concentration in 2019 to 180 J ng/L (increasing from 29 ng/L in October 2010). It would be appropriate to add this well to the monitoring program to evaluate trends and potential impacts to the South Ditch Stream.
- j. GW-87D (Maple Meadow Brook Wetlands): NDMA concentrations appear to be increasing overall (from 1,600 ng/L in 2011 to 4,000 ng/L in 2019). This well screen is also the deepest in its general area, thus, it would be appropriate to add this well to the monitoring program.
- k. GW-403D (east of the Olin property): NDMA was detected in this well for the first time in 2019, at less than 1 ng/L. This well was previously sampled twice in 2010, and NDMA was not detected in either sample. Since this is a sentinel well east of the Olin property, it would be appropriate to include in the quarterly monitoring program.
- l. MP-5 #08 (Maple Meadow Brook Wetlands): The 2019 NDMA concentration of 3,400 ng/L showed a significant increase from previous samples (which ranged from 790 ng/L in 2005 to 1,300 J ng/L in 2010). It would thus be appropriate to include this location to evaluate future trends.

- m. MP-5 #12 (Maple Meadow Brook Wetlands): Based on the 2019 sampling, this is the deepest interval (screened at an elevation of 31-33 ft MSL) of low concentrations (at 1 J ng/L), and just above the high concentration of 450 ng/L in MP-5 #11. Therefore, it would be appropriate to include this location as a sentinel well in the quarterly monitoring program.
 - n. MW-204M (Maple Meadow Brook Wetlands): The 2019 NDMA concentration of 4.1 ng/L was noticeable, after not being detected in previous samples (collected in 2003 and 2011). It would thus be appropriate to include this well in the quarterly sampling to determine if the detections in this well (and other wells in this cluster) indicate an increasing trend.
4. The following wells are those previously requested by EPA and which were not sampled in the 2019 sampling event. These should be included in the next groundwater sampling event.
- a. GW-46D (southeast of the Main Street DAPL pool): GW-46D was planned for inclusion in the site-wide initial sampling to confirm the previous non-detects. It is appropriate to retain this as a one-time sample as initially planned, and subsequently re-evaluate the sampling frequency for this location if NDMA is detected.
 - b. GW-67D (northwest of the Main Street DAPL pool): Similar to GW-46D, GW-67D was planned for one additional round of sampling to confirm the previous non-detects. However, unlike GW-46D, GW-67D is in a critical location (just outside the plume core) and has had a single detection in the past (4.3 ng/L in 2005). For now, EPA finds it acceptable to keep GW-67D as a one-time additional sample, with the caveat that if concentrations increase downgradient of the Main Street DAPL pool, it would be appropriate to include this location in future sampling events.
 - c. GW-67S (northwest of the Main Street DAPL pool): This location was planned for one additional round of sampling to confirm previous non-detects. As this well is not in such a critical location with regards to the plume and plume core, EPA concurs with the plan for one additional sampling event at GW-67S, again with the caveat that sampling frequency should be re-evaluated if NDMA is detected in this next sampling round.
 - d. MP-4 #8 and #9 (northwestern perimeter of the Main Street DAPL pool): A note here to clarify that MP-4 #9 was included in the original quarterly sampling list and needs to remain on that list, as it is right below very high NDMA detections and serves as a sentinel location. As for MP-4 #8, this was planned as a one-time additional sampling event. EPA concurs with this plan for now, but if concentrations in the next sampling event are elevated in the MP-4 #8 sample, it would be appropriate to evaluate the addition of this location to the quarterly monitoring list.
5. The Letter proposes to sample seven surface water locations for analysis of ammonia, BEHP, NDMA, sulfate, and total chromium.
- a. Please confirm that these samples are in addition to the Semi-Annual Status Report (SASR) sampling, which includes additional analytes and locations.
 - b. The surface water analyses should include the following additional parameters described in Comment 2 above: aluminum, hexavalent chromium, and the parameters included in the Plant B quarterly sampling program (TMPs, iron, and volatile petroleum hydrocarbons).

Regards,

Melanie

Melanie Morash
Superfund Project Manager
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From: Esakkiperumal, Chinny CERG <CEsakkiperumal@olin.com>
Sent: Wednesday, October 23, 2019 12:52 PM
To: MORASH, MELANIE <morash.melanie@epa.gov>; DiLorenzo, James <dilorenzo.jim@epa.gov>
Cc: Jennings, Lynne <Jennings.Lynne@epa.gov>; Cashwell, James M CERG <JMCashwell@olin.com>;
Bowen, Libby T <libby.bowen@woodplc.com>
Subject: Wilmington OCSS - Proposal to Append the Ongoing Quarterly Monitoring Program

Melanie,

As discussed during the October 2 and 3, 2019 meetings, attached letter proposes adding:

- Monitoring locations to the ongoing quarterly groundwater and surface monitoring program; and
- Specific gravity measurements (in lab) from select wells to better define the dense aqueous phase liquid (DAPL) extent.

Let us know if EPA concurs with the recommendations.

Regards,
Chinny.

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Figure 1 -- Revised COC Groundwater Monitoring Program: Shallow Wells

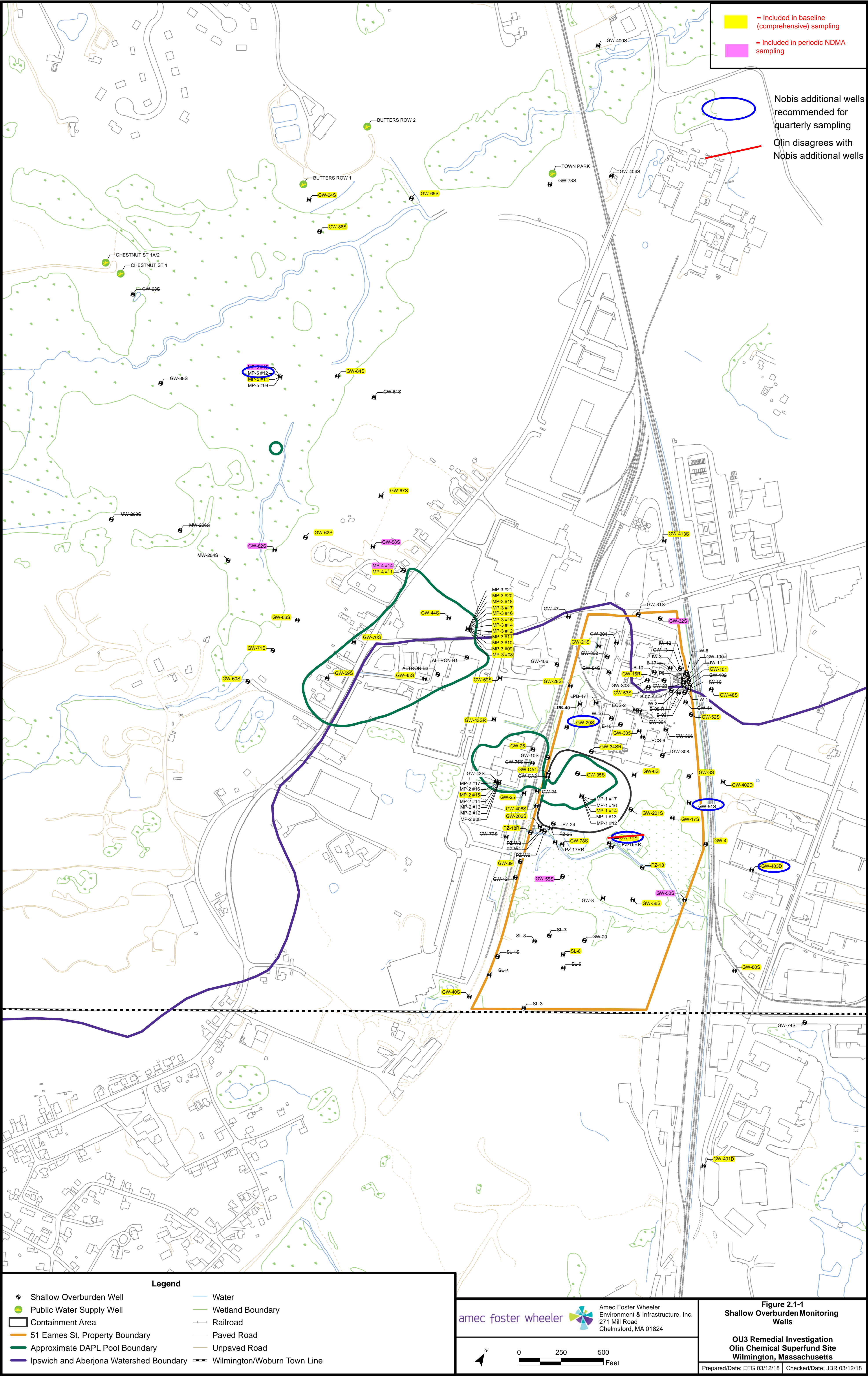


Figure 2 -- Revised COC Groundwater Monitoring Program: Deep Wells

